[0062] The label layer **252** serves to protect the underlayers and to provide a surface for allowing a finger to slide thereon. The surface is generally smooth so that the finger does not stick to it when moved. The label layer **252** also provides an insulating layer between the finger and the electrode layer **254**. The electrode layer **254** includes a plurality of spatially distinct electrodes **258** that have positions based on the polar coordinate system. For instance, the electrodes **258** are positioned both angularly and radially on the circuit board **256** such that each of the electrodes **258** defines a distinct angular and radial position thereon. Any suitable number of electrodes **258** may be used. In most cases, it would be desirable to increase the number of electrodes **258** so as to provide higher resolution, i.e., more information can be used for things such as acceleration.

[0063] When configured together, the touch pad **250** provides a touch sensitive surface that works according to the principals of capacitance. As should be appreciated, whenever two electrically conductive members come close to one another without actually touching, their electric fields interact to form capacitance. In this configuration, the first electrically conductive member is one or more of the electrodes **258** and the second electrically conductive member is the finger of the user. Accordingly, as the finger approaches the touch pad **250**, a tiny capacitance forms between the finger and the electrodes **258** in close proximity to the finger. The capacitance in each of the electrodes **258** is measured by control circuitry **260** located on the backside of the circuit board **256**. By detecting changes in capacitance at each of the electrodes **258**, the control circuitry **260** can determine the angular location, direction, speed and acceleration of the finger as it is moved across the touch pad **250**. The control circuitry **260** can also report this information in a form that can be used by a computing device. By way of example, the control circuitry may include an ASIC (application specific integrated circuit).

[0064] **FIG. 9** is a flow diagram of touch pad-display processing **300**, in accordance with one embodiment of the invention. The touch pad-display processing **300** allows a user to interact with a graphical user interface of a computing device. The touch pad-display processing **300** generally begins at block **302** where at least one control object is displayed on the graphical user interface. By way of example, the control object may be a slider bar that highlights information from a list in a menu displayed on a graphical user interface on a display screen. The displayed control object is generally controlled by the processor **214** illustrated in **FIG. 3**. Following block **302**, the touch pad-display processing proceeds to block **304** where a user input is received. The user input may be received by the processor **214** illustrated in **FIG. 3**. In one embodiment, the user input is an angular referenced input, as for example, a user input produced by a rotational user action such as a finger swirling across the touch pad. By way of example, the touch pad may correspond to the touch pad illustrated in **FIG. 3**. In another embodiment, the user input is a radial referenced input, as for example, a user input produced by a radial user action such as a finger radially moving across the touch pad. By way of example, the touch pad may correspond to the touch pad illustrated in **FIG. 4**.

[0065] Following block **304**, the touch pad-display processing proceeds to block **306** where the angular or radial referenced user input is converted into a linear referenced input. The conversion may be implemented by the processor **212** illustrated in **FIG. 3**. Following block **306**, the touch pad-display processing proceeds to block **308** where control object is modified in accordance with the linear referenced input. For example, the control object such as a slider bar may be linearly moved from a first item to a second item on a list or it may be moved through multiple items on a list (e.g., scrolling). The modification is generally implemented when the processor **214** illustrated in **FIG. 3** supplies the linear referenced input to the graphical user interface on the display screen.

[0066] The various aspects of the invention described above can be used alone or in various combinations. The invention is preferably implemented by a combination of hardware and software, but can also be implemented in hardware or software. The invention can also be embodied as computer readable code on a computer readable medium. The computer readable medium is any data storage device that can store data which can thereafter be read by a computer system. Examples of the computer readable medium include read-only memory, random-access memory, CD-ROMs, DVDs, magnetic tape, optical data storage devices, and carrier waves. The computer readable medium can also be distributed over a network coupled computer systems so that the computer readable code is stored and executed in a distributed fashion.

[0067] Furthermore, although a scrolling feature is described, it should be noted that a scrolling feature is not a limitation and that the touch pad may be used to manipulate other features. For example, the touch pad may be used to adjust a volume control in an audio application. In addition, the touch pad may be used to advance through frames in a movie in video editing applications. The touch pad may also be used in video game applications.

[0068] The advantages of the invention are numerous. Different embodiments or implementations may yield one or more of the following advantages. It should be noted that this is not an exhaustive list and there may be other advantages which are not described herein. One advantage of the invention is that a user is able to easily and rapidly traverse a lengthy list of media items. Another advantage of the invention is that a substantial portion of the touch pad is accessible to the user, i.e., the touch pad provides a large surface area for manipulation thereof. Another advantage of the invention is that the touch pad can be continuously actuated by a simple swirling motion of a finger, i.e., the finger can be rotated through 360 degrees of rotation without stopping. Another advantage of the invention is that the touch pad provides more range of finger positions. For example, a left handed user may choose to use one portion of the touch pad while a right handed user may choose to use another portion of the touch pad. In essence, the touch pad is more ergonomic. Another advantage of the invention is that the touch pad makes the media player more aesthetically pleasing. Another advantage of the invention is that the touch pad allows an intuitive way to scroll on a display screen. For example, the user can manipulate the his or her finger side to side for horizontal scrolling and the user can manipulate his or her finger backwards and forwards for vertical scrolling.

[0069] While this invention has been described in terms of several preferred embodiments, there are alterations, per-